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### Policy

The U.S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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### Notice

Due to critical shortage of medical officers, the Chief, Bureau of Medicine and Surgery, has recommended, and the Chief of Naval Personnel has concurred, that Reserve medical officers now on active duty who desire to submit requests for extension of their active duty for a period of three months or more will be given favorable consideration.

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### Residency Training Policy for Reserve Medical Officers on Active Duty

The response by Reserve medical officers to the Residency Training Program for Reserve officers, as provided in BuMed Instruction 1520.7, has been most gratifying. There are several vacancies remaining in the following residency programs: Pathology, Orthopedic Surgery, Obstetrics and Gynecology, Pediatrics, and Urology. A very limited number of billets are still available in Otolaryngology, Anesthesiology, and Ophthalmology. While applications for training in the above specialties should be for one year at a time, it is expected that in most instances officers who participate in this program will be permitted to complete their required training without interruption. Every effort will be made to accomplish this insofar as service needs will permit.

Reserve medical officers on active or inactive duty, who have completed their obligated active duty imposed by the Universal Military Training and Service Act, as amended, are eligible for participation in this program. Reserve officers on inactive duty must request return to active duty in order to be assigned to such training.



Eligible and interested medical officers should make applications to the Bureau of Medicine and Surgery, via the chain of command. Letters of application should contain an agreement to volunteer for the period of residency training requested and to remain on active duty in the Navy for a period of one year following completion of training, for each year of training received.

From time to time the list of medical specialties in which shortages exist will be published in the Medical News Letter. (ProfDiv, BuMed)

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### Histological Study of Effusions

This is a detailed morphological study of the cellular forms identified in effusions from the pleural, peritoneal, and pericardial cavities. The investigation was undertaken in order to study: (1) the cellular changes not associated with malignant neoplasm, and in particular, those that might be misinterpreted as evidence of cancer; and (2) the changes observed in the presence of malignant tumors.

The results of the investigation are presented in two parts. The first is concerned with features of the cells in effusions that are not associated with malignant tumor, while the second deals with the cellular forms observed in the presence of malignant tumors or their metastases.

#### Part I

In the first study 396 pleural, peritoneal, or pericardial fluids of known etiology not associated with malignant neoplasm, were reviewed critically in order to examine cells and cell groupings that might be misinterpreted as evidence of malignant tumor. In the presence of long-standing effusion, the proliferation of mesothelial cells was responsible for unusual cell groupings and alterations in isolated cells known to be of mesothelial origin. The masses of mesothelial cells were regarded as being aggregates, rosettes, or acinar-like structures. Of these, aggregates were the most common, being observed in 148, or 37% of the fluids. The rosettes and acinar-like masses were less common, being observed respectively in only 36, or 9%, and 23, or 6% of the specimens. In general, aggregates were more common with cirrhosis and congestive failure and were less numerous in effusions of tuberculous origin. Acinar-like structures similarly were more common with congestive failure and Laennec's cirrhosis as were rosettes, the latter not being observed in 75 specimens of tuberculous effusions. This would seem to indicate that mesothelial proliferation was less apparent in the presence of effusion with tuberculosis.

Neither aggregates nor rosettes of mesothelial cells offered a serious problem in differentiation from malignant neoplasm. The component

cells were usually recognizable as mesothelial elements and were not misleading. The acinar-like groupings were most disturbing.

The isolated cellular constituents were regarded less often as being misleading to the critical microscopist. Several forms deserve special comment. Vacuolization of the mesothelial cells was common, being noted in 152, or 38%. In many cells the large vacuole displaced the nucleus to an eccentric position in the cell and the resulting form was not unlike that of the so-called "signet-ring" cell in adenocarcinoma. Special stains offered little help in such elements, because the inclusions were not infrequently positive or doubtful with the mucicarmine stain, representing glycoprotein material. In general, such forms should not be confused with those seen in adenocarcinoma.

Giant cells occurred in 105, or 26% of the specimens. Because these were usually regarded as being of mesothelial origin, their distinction from cancer cells offered no serious problem. An awareness of such cells is important in examining fluid specimens.

Isolated cells in mitosis were observed in 33, or 8% of the fluids. The observer who has examined fluid specimens will not find these cells misleading. In general, a normal mitotic figure in an isolated cell in itself is not evidence of a malignant neoplasm. This is particularly true when the cell is regarded as being of mesothelial origin; however, when the cell type is regarded as being of lymphocytic origin and in addition, other cells are present, the problem is more difficult.

The most difficult problem in examining the isolated cells was encountered in the presence of tuberculosis. While only rarely was adenocarcinoma even remotely considered, the distinction between tuberculosis and leukemia or lymphosarcoma on an objective basis was more difficult in isolated cases. This was a problem in those cases of tuberculosis in which there were numerous cells of lymphocytic origin, many of which were transition forms to medium-sized lymphocytes. The presence of mitoses in such cases added to the difficulty. In the interpretation of a specimen, it was not possible to exclude mature lymphocytic lymphosarcoma or leukemia, although distinction from lymphoblastic lymphosarcoma was possible. Seven, or 15% of the cases of tuberculosis presented such a problem. Obviously, the clinical data in such cases was of considerable value in arriving at a correct interpretation. In some instances a superior preparation might have permitted a more accurate differential diagnosis because the degenerative changes in the lymphocytes made examination difficult.

## Part II

This is a detailed morphological study of the cellular elements in pleural, peritoneal, and pericardial effusions associated with malignant tumors or their metastases. This study is based on the examination of 619 effusions from 339 patients with malignant neoplasms. These



specimens constituted all of the fluids received from patients in whom there was definite clinical or pathological evidence of malignant neoplasm during the interval of the study. The recognition of malignant tumor cells in effusions is of importance in establishing a diagnosis in otherwise obscure cases. In some instances, these cells not only aid in establishing a diagnosis of malignant tumor but also in determining the site of origin of the tumor.

In this study, the origin of malignant tumor cells was often suggested by their characteristic appearance and arrangement in adenocarcinoma of the lung, papillary adenocarcinoma of the ovary, and in the lymphomas. In 31 of the 49 specimens containing malignant tumor cells derived from adenocarcinoma of the lung, numerous large isolated cells were either the only arrangement of the malignant tumor elements or the predominant one. Cellular membranes were prominent and the cytoplasm was abundant, acidophilic, and finely to coarsely vacuolated.

The nuclear forms were large, pleomorphic, and often multiple. Macronucleoli and mitotic figures were frequent. In 18 of the effusions there were aggregates of the cancer cells and acinar-like forms.

In 26 of the fluids examined from patients with carcinoma of the ovary, there was a similar cellular arrangement. This consisted of numerous cancer cells occasionally interspersed with erythrocytes. Other cellular elements were rare. The tumor cells were large and arranged as single cells, acinar-like forms, or irregular aggregates. The cytoplasm was abundant and vacuolated; large "signet-ring" forms were common. The nuclei were pleomorphic and often contained macronucleoli. Occasional papillary forms and calcific masses were noted.

Among the specimens obtained from patients with lymphomas, two cellular arrangements were noted. The one occurred in effusions associated with either lymphosarcoma or lymphatic leukemia and consisted of numerous small, medium-sized or transition forms of lymphocytes. Other cellular elements were rare. This cellular picture was similar to that seen occasionally with tuberculous effusions. Mesothelial cells were usually present in the effusions associated with tuberculosis and were of aid in distinguishing the two. In patients with myeloid leukemia, the effusions showed numerous myelocytes, more immature forms of the granulocytic series, and neutrophils. In some cases large numbers of megakaryocytes were present.

Tumor implants need not be present on the serosal surfaces in all cases of effusions associated with malignant neoplasms. The effusion may be secondary to mechanical obstruction of the veins, or lymphatics, or to a secondary inflammatory process.

Malignant tumor cells were identified in 418, or 67.5% of the 619 fluid specimens examined, and in 252, or 74.3% of the 339 cases. Cancer cells were present in effusions from 96% of the patients with carcinoma

of the ovary, 94% of those with diffuse carcinomatosis, and in 78.5% to 72.7% of those with carcinoma of the breast, digestive system, lung, and uterus. Lymphomas showed the presence of diagnostic cells less frequently than carcinomas. The presence of isolated large cancer cells was considered the most common arrangement of the exfoliated elements in adenocarcinoma of the lung. In papillary carcinomas of the ovary, the usual pattern was one of numerous malignant tumor cells arranged in acini and irregular clumps, with marked vacuolization of the cytoplasm. In many cases of myeloid leukemia and lymphosarcoma, the cellular patterns were distinctive.

It was not possible to depend entirely on clumping or acinar-like formations of malignant tumor cells. In adenocarcinoma of the lung, occasional undifferentiated carcinoma of the stomach, lymphosarcoma, and leukemia, isolated neoplastic elements were common, and sometimes the only forms present. However, it was considered hazardous to make a diagnosis of malignant tumor cells on the basis of scattered atypical cells or isolated rare abnormal forms. (Cancer, Nov., 1954; S.A. Luse, M.D. and J.W. Reagan, M.D., Western Reserve University, Cleveland, O.)

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#### Treatment of Angina Pectoris with Cinchona Alkaloids

Previous studies have demonstrated the value of quinidine sulfate in the treatment of some patients with angina pectoris. However, most general practitioners, and in fact, many cardiologists hesitate to use quinidine in angina because of the complications which occasionally follow its use in the treatment of cardiac arrhythmias. Furthermore, many physicians hesitate to use quinidine in angina pectoris because its mode of action in this condition is not clear. It seemed worthwhile, therefore, to study the activity of drugs related to quinidine, in an attempt to find a substance equally effective but possibly less toxic, and also to throw some light on the mechanism of action in the treatment of angina pectoris.

The comparative value of 12 pharmaceutical preparations was investigated in patients with angina pectoris. Five of these 12 were cinchona alkaloids (the sulfate salts of quinidine, quinine, cinchonine, cinchonidine, and cinchamidine); these were studied to determine whether drugs which were similar to quinidine in chemical structure but different in cardiodynamic and cardiotoxic effects were of therapeutic value in angina. Procaine amide (Pronestyl) was included because, like quinidine, it is of value in eliminating ectopic ventricular beats. Three synthetic



antimalarial preparations (chloroquine, pentaquine, and chlorguanide) were chosen to see whether the therapeutic action in angina might be related to the mechanism responsible for antimalarial activity. Nitroglycerin was used to determine which patients were likely to be benefited by vasodilator drugs, and also to compare the effectiveness of the cinchona alkaloids with that of nitroglycerin which is the most effective of the drugs for angina. Pentaerythritol tetranitrate (Peritrate) was included to compare the frequency and degree of response of the cinchona alkaloids with that of a preparation currently advocated for the treatment of angina pectoris. Finally, placebos were used for control studies and to equalize the beneficial psychologic effects of treatment.

Evaluation of the efficacy of treatment in angina pectoris is difficult. The methods of evaluation included: (1) a comparison of the clinical response with measurements of the exercise tolerance under standard cold conditions, and studies of the effect of medication on the electrocardiographic changes induced by exercise; (2) comparison of the value of the cinchona alkaloids with the ineffective placebos, the very effective nitroglycerin and the slightly effective pentaerythritol tetranitrate, and (3) analysis of the results in two separate groups of subjects, those likely to respond to vasodilator therapy and those not likely to respond to such therapy.

Four of the cinchona alkaloids (quinidine, quinine, cinchonidine, and cinchamidine) proved to be highly effective in some, but not all, patients with angina. The patients most likely to respond to these cinchona alkaloids were those who responded well to nitroglycerin. No toxic and few untoward effects were observed.

Quinidine and quinine are among the most effective of the drugs now available for the treatment of angina pectoris. Quinine is the drug of choice because of low toxicity, effectiveness, and low cost to the patient. Quinine possesses little of the potential cardiotoxic effects of quinidine. The latter drug is equally available but somewhat higher in cost. Quinidine is possibly somewhat more effective in angina than is quinine.

The effectiveness of the cinchona alkaloids in angina pectoris is due, at least in part, to a vasodilator action. The quinoline ring is probably the portion of the molecule primarily responsible for the therapeutic effect. (Circulation, Dec., 1954; J. E. F. Riseman, M. D., L. A. Steinberg, M. D., and G. E. Altman, M. D., Beth Israel Hospital, and Harvard Medical School, Boston, Mass.)

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The printing of this publication has been approved by the Director of the Bureau of the Budget, June 23, 1952.

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### Tuberculosis Risk in Children of Tuberculous Parents

This article calls attention to the interesting paradox that, the closer the elimination of tuberculosis as a major public health problem becomes, the more important becomes the understanding of its epidemiology. As the "irreducible minimum" of morbidity is approached, as it becomes more and more difficult to find the fewer cases in the community, it also becomes more important to concentrate control efforts on those segments of the population which are most apt to provide a fruitful yield of new and previously undiscovered cases of the disease. The description and delineation of these crucial population segments depend on the epidemiologic study of factors which govern the occurrence and distribution of tuberculosis in that population.

As a group, children of tuberculous parents run an unusually great risk of developing tuberculosis. Most observers agree that this is due in large part to the highly intimate contact between the host and the susceptible individual. Nevertheless, this is obviously not the whole explanation, because other groups of people in the same tuberculous households, with similar opportunities for intimate contact with, but unrelated or more distantly related to the tuberculous host, have lower attack and death rates than close relatives. The difference is presumably attributable to the operation of a hereditary constitutional factor which makes close relatives of tuberculous persons more likely to develop tuberculosis.

The children of tuberculous parents were selected for special investigation because they are known to be particularly liable to develop tuberculosis, because they are a homogeneous group genetically, are easily identified, and are more readily kept under observation than most other members of tuberculous households.

The tuberculosis attack rate was 3.3 per 1000 person-years among children of tuberculous parents with sputum positive for acid-fast bacilli, compared with a rate of 1.8 for children of a tuberculous parent in whom no bacilli were demonstrated.

In the former group the highest rates were observed in those less than 5 years and in those 15 to 24 years of age. In the latter group, attack rates were extremely low in persons less than 15 years of age, but then rose and reached a peak at 25 to 34 years.

The ultimate goal of epidemiology is to provide the factual knowledge of disease necessary to bring about its control. If sufficient time, funds, and personnel were available, it might be justifiable to use broad, general epidemiologic factors as guides to a control program in tuberculosis. However, with the perennial reduction in Federal funds for tuberculosis control in recent years, and with the increasing cost of finding a case by general survey procedures, it is becoming more and more



essential to concentrate control efforts on the most vulnerable segments of the population. The finer, more specific epidemiologic factors must be sought as guides in planning tuberculosis control programs. The foregoing data may suggest lines of approach in planning such programs.

Children of parents with "open" tuberculosis should be observed closely, particularly during the first year of life and during the 15 to 24-year age period. In infancy the male child requires closer observation because of apparent greater susceptibility to tuberculosis than the female. During adolescence and early adulthood the female child appears more vulnerable to attack and should be watched carefully, although the male should not be ignored. Periodic examination of children should not cease because contact may have been broken with the tuberculous parent through moving out of the household. It appears that a sufficiently large number of new cases develop after removal to justify going beyond the confines of the household and continuing to observe removed contacts, particularly if the individuals are more than 25 years of age.

If complete observation of all children of tuberculous parents is impossible, it appears safe to ignore those exposed for the first time between the ages of 1 and 14. After these children reach 15 years of age, periodic examination is indicated. (Am.Rev. Tuberc., Dec., 1954; L.D. Zeidberg, A. Dillon, and R.S. Gass, Tennessee Dept. of Public Health, Franklin, Tenn.)

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### Unobtrusiveness in Treating Obesity

Every physician realizes that obesity cannot be treated successfully by merely prescribing diets and drugs. Weight control obviously depends less on the therapy itself than on the degree to which the patient follows it. Failure of therapy can nearly always be traced to an inherent psychologic inadequacy of the patient. Therefore, it is the physician's responsibility to devise a regimen that will provide each patient with a maximum of protection against his own shortcomings.

For an initial study, 27 patients were chosen whose histories had demonstrated clearly that they would be least likely to respond to weight control measures. Each had failed to respond to all previous therapy. Many of them had failed so frequently that their obesity had begun to appear a chronic and incurable condition. Their ages varied from 17 to 61 years, and their overweight varied between a marginal excess and gross obesity. Several patients whose weight excess was still quite minor were included in the study in the hope of checking a demonstrated trend toward progressively serious obesity. In approximately one-third of the patients studied, obesity was complicated by diabetes or hypertension or both.

Prior to therapy, the author spoke frankly to each patient, warning him of the dangers of his condition and pointing out the psychologic overtones of his inability to lose weight. Each patient was asked to provide a description of his normal diet and the eating habits dictated by his usual social activities. Using these facts as a basis, the author outlined the framework of a diet of about 1200 to 1500 calories which approximated as closely as possible the individual eating pattern described. Patients were not told that they must not eat cake or ice cream, nor were they forbidden soft drinks or beer. Realizing that these foods are the staples of social eating, moderation rather than abstinence was stressed.

Because of the familiarity of these patients with conventional regimens, the lack of taboos usually engendered a feeling that the treatment was "too easy." This, however, provided an excellent opportunity for bringing home the importance of unobtrusiveness, the essential feature of the regimen. It was easy to explain that although normal people may be pleased to see the successful results of diet, they dislike intensely having the diet itself paraded before them. Each patient was shown how the flaunting of his treatment in public intensified his craving for forbidden foods and at the same time drove his friends, bored by the constant talk of diet, to vent their annoyance by tempting him to abandon his overadvertised regimen and by ridiculing him when he did so. Avoidance of this trap, it was explained, dictated the only specific taboo of the regimen: don't talk about the treatment.

Rather than to rely exclusively on the ease of the regimen to insure patient adherence, anorexigenic drugs were utilized as well. A daily dose of 15 mg. of d-amphetamine sulfate was prescribed in the sustained-release dosage form. It was possible to include this drug in the regimen without violating the essential secrecy of the treatment. The patients were instructed to take one capsule each morning before breakfast.

Special attention was given to the psychologic outlook of each patient, as well as to any clinical abnormalities that coexisted with his obesity. The duration of observation ranged from 4 to 39 weeks, the average time being 17 weeks.

The average weekly weight loss for this group of patients was 1.1 lb., which was 0.2 lb. less than reported by Gelvin and McGavack using comparable doses of amphetamines and a diet of 1060 calories.

The patients reported that they experienced comparatively little difficulty in keeping their treatment secret until weight losses became apparent. In anticipation of this problem, it had been suggested that the patient acknowledge the fact that he was under treatment when it became obvious. They were cautioned, however, to be casual about it, to avoid details, and above all, to refrain from volunteering information. This approach was quite satisfactory in heading off discussion. Few patients were pressed for details, apparently confirming the premise that normal people are rarely interested in the details of obesity.



The results obtained with one patient, although statistically poor, were particularly gratifying because they were obtained during pregnancy. This patient's previous pregnancy had been complicated by an excessive gain in weight and by severe nausea and vomiting. Nausea, which was present when the patient started treatment, was promptly relieved, and rather than gaining weight, she actually lost 10 pounds.

This regimen was not intended to supplant the current methods of therapy. It was designed, rather, to establish basic guide lines that might help to clarify and improve the approach to the psychologic aspects of treating obese patients. The significance of the results lies, not in the tabulated weight losses, but rather in the fact that all of the responses recorded were obtained with patients who had consistently failed with previous therapy.

Although the study is clearly too limited to be regarded as conclusive, it does suggest that an unobtrusive regimen may succeed where essentially similar therapy, lacking only the factor of unobtrusiveness, has consistently failed.

At the same time, the success obtained from the purely psychologic advantages of this approach tends to confirm the importance of the psychic factor in obesity therapy and to lay added emphasis on the need for the physician to provide a regimen that is as sound psychologically as it is physiologically. In this connection, the exceptionally good mental attitude of these patients while undergoing treatment deserves mention. Although the "easy" regimen undoubtedly contributed to this, experience with the mood ameliorative properties of amphetamines, confirming the observations of Williams, leads one to credit this type of drug with an appreciable psychologic "assist." It is interesting to note how closely the actions of the drug parallel the essential features of the regimen. It improves mood, curtails appetite, and in the sustained-release dosage form, even succeeds in being unobtrusive.

Throughout the study, there were almost no side effects to therapy with d-amphetamine sulfate. Normotensive patients showed no appreciable alteration in blood pressure. Concurrent with their loss of weight, eight patients, whose obesity was complicated by hypertension, demonstrated a reduction in blood pressure. This is not meant to imply that d-amphetamine sulfate is treatment for high blood pressure per se, but to emphasize that this drug can be included quite safely in a weight reduction regimen for people having hypertensive vascular disease. (GP, Dec., 1954; J. C. Cohen, M. D., Philadelphia)

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### Pheochromocytoma

One of the curable forms of hypertensive cardiovascular disease is that caused by pheochromocytoma, although the actual frequency of these tumors is low. In a series of over 2400 hypertensive patients treated surgically, only 15 were found to have a pheochromocytoma, an incidence of about 0.5%. The appalling fact, however, revealed by a review of the literature, is that pheochromocytoma is diagnosed only at autopsy in about 70% of reported cases. Because surgical removal is almost always followed by cure of the disease, it is important that the index of suspicion be high, that diagnostic points be kept clearly in mind, and that the management of the patient before, during, and after operation be thoroughly understood and properly carried out.

Pheochromocytomas develop from chromaffin tissue and are thus located wherever it is found. Ninety percent are found in the adrenal medulla, but they may also occur in the lumbar or thoracic paravertebral spaces, in and about the great vessels of the abdomen, in the organ of Zuckerkandl at the bifurcation of the aorta, in the celiac ganglion, and even within the cranial cavity. The tumors are bilateral in 10%, and are malignant in about 10% of the cases.

Pheochromocytomas secrete epinephrine and norepinephrine in varying amounts and proportions. This fact has important implications which concern the operative management of these patients, and is discussed in detail.

Although the hypertension of pheochromocytoma is commonly paroxysmal, it may be nonparoxysmal and the disease be almost indistinguishable from essential hypertension. Once the lesion is suspected, however, various measures may be employed to verify the diagnosis because no single test is infallible. These measures include the eliciting of certain characteristic signs and symptoms, roentgenologic examinations, the use of various test drugs, and finally operative exploration.

Smithwick and his collaborators in a comprehensive study of the problem have laid particular emphasis on certain signs and symptoms that occur frequently in patients with pheochromocytoma but are not usually found in patients with essential hypertension. Most of these appear to be related to the presence of epinephrine or norepinephrine in the circulating blood. They are excessive sweating, peripheral vasomotor phenomena (vasoconstriction), elevated body temperature (1 F. or more), normal cold-pressor blood pressure response, fasting blood sugar level of 120 mg. per 100 cc. or more, basal metabolic rate of 20% or more, postural tachycardia and postural hypotension, glycosuria, and paroxysmal attacks of hypertension. This data is readily obtained by any physician and requires no special facilities. When any of these symptoms are present



the physician should be on the alert for pheochromocytoma. Intravenous pyelography, laminography, and perirenal air injection may be helpful in visualizing the location of a pheochromocytoma.

In the authors' experience with operations on hypertensive patients having either essential hypertension or pheochromocytoma, serious accidents occur more frequently from failure to cope with episodes of hypotension than from hypertension. For this reason, preparation of patients for operation with blocking agents and the use of these agents to reduce pressure during operation, is avoided. In the event that other measures to reduce dangerous blood pressure levels are unsuccessful, and it becomes necessary to employ a blocking agent, regitine is preferred because of the short duration of its action.

The authors agree with Apgar and Papper that the selection of anesthesia is perhaps less important than understanding of the physiologic principles underlying management. The circulation must be supported. Adequate ventilation must be maintained. Endotracheal intubation is obligatory. Spinal anesthesia and cyclopropane are best avoided, the former because of the danger of circulatory collapse, and the latter because it sensitizes the heart to epinephrine and norepinephrine. Rapid induction with a mixture of thiopental sodium and a muscle relaxant may precipitate a dangerous vascular collapse. Muscle relaxing agents have not been employed for this group of patients except in 1 or 2 cases in which mytolon chloride was administered to facilitate intubation when splanchnicectomy was the proposed operation, and the pheochromocytoma not previously diagnosed was discovered in the course of the operation. No untoward effects were noted following the use of this drug. Also, no serious effects were noted which could be ascribed to the sympathomimetic effects of ether. (Anesthesiology, Nov., 1954; J. E. Thompson, M.D. and J. G. Arrowood, M.D., Massachusetts Memorial Hospitals, and the Boston University School of Medicine, Boston, Mass.) (See U.S. Navy Medical News Letter, Vol. 20, No. 5, and Vol. 22, No. 5.)

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#### Cardiopericardiopexy

The various operative procedures advocated to reestablish adequate myocardial circulation, and the many approaches may be grouped into four surgical tenets: (1) the grafting of a vascular tissue to the myocardium (omentum, lung, skeletal muscle, mediastinal fat and spleen); (2) arterIALIZATION of the coronary veins, as channels to increase oxygenation, by means of a vascular anastomosis; (3) implantation of the internal mammary artery into the ventricular myocardium, and (4) creation of a benign, permanent and chronic granuloma between the visceral and parietal layers of

the pericardium. Cardiopericardiopexy falls into the last-mentioned category, and this article is confined to a description of the procedure and a brief recital of its results.

What is cardiopericardiopexy, and how simple or complex is its execution? Of all the surgical procedures advocated for the treatment of diseases that have their basis in myocardial ischemia, cardiopericardiopexy is unquestionably the most modest in concept and the simplest to perform. The operation can be completed in 30 minutes or less. It is not necessary to open the pleural cavity. No intricate, time-consuming anastomosis, always involving the possibility of thrombosis, is required. It is a one-stage procedure. It does not demand special skills or talents other than those possessed by any well-trained and experienced general surgeon who is familiar with the anatomic and physiologic nature of the heart and the mediastinal structures. Incisions are not extensive and are not carried through heavy muscles rich with blood.

The operation of cardiopericardiopexy, as performed, may be illustrated best as taking place in three steps: Step 1 includes positioning of the patient, incision of the skin, and exposure and excision of the costal cartilage. Step 2 exposes the anterior mediastinum, including the pericardium. In Step 3 the pericardium is opened, the sac is explored, talcum powder is introduced and the surgical wound is closed.

What are the postoperative problems? Shock, arising from prolonged exposure and excessive handling of vital tissues and organs, is never experienced. Although the problems encountered after the operation are unusual and peculiar to this procedure, they are almost always limited in number, extent, and gravity, and they seldom terminate in death. These special problems may be grouped into those due to operative trauma, those due to foreign body reaction, and those due to the diseased condition of the heart. Postoperative pain is, on the whole, a minor complication; it is neither severe nor prolonged, persisting only for a few days, and may be controlled by the administration of sedatives and analgesics. The foreign body reaction, which is invoked by the talc introduced into the pericardial sac, reflects itself in a rise of temperature and involves the lungs, pleura, heart, pericardium, and mediastinum. None of these complications is of sufficient gravity to endanger life.

By far the most important of the complications that follow cardiopericardiopexy are those which arise because of the diseased state of the heart. Although extrasystoles may develop frequently during the operation, they are encountered only occasionally thereafter. Undoubtedly, the most serious problem is coronary occlusion.

What are the benefits derived from cardiopericardiopexy? Clinical improvement is statistically significant. In a 15-year study of patients who had undergone cardiopericardiopexy, 90% were improved more than 50%, and 40% were improved more than 75%, as shown by decrease in anginal



pain, increase in exercise tolerance, and improvement in ability to attend to their daily needs and return to a former, or some other, gainful occupation. In addition to this physical improvement, the patients who died after undergoing surgical treatment lived for an average of 5 years, which gives them an average life span of 9-1/2 years from the onset of the first symptom. This compares favorably with the average life span of 4-1/2 years (from the onset of the first symptom) of the patient treated medically for coronary disease. Statistically, cardiopericardiopexy contributed 5 years to the life of the average patient who underwent the operation. (J. Internat. Coll. Surgeons, Nov., 1954; S.A. Thompson, M.D. and L.A. Akopiantz, M.D., New York City)

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### Acute Pancreatitis

Etiologic factors causing acute pancreatitis may be summarized as follows: (1) trauma which in itself may bring about the liberation of some toxic body formed by the escape of products, the result of proteolytic action in the presence of free blood due to blood vessel injury; (2) diseases of the blood vessels, such as arteriosclerosis, endarteritis, and atheroma leading to thrombosis; (3) conditions causing a reflux of bile or duodenal contents through the pancreatic ducts into the pancreas, such as (a) gallstones, (b) stone in the common duct, (c) stone in the ampulla of Vater, (d) tumor of the ampulla of Vater, (e) tumor of the common duct, (f) cicatrization of the ampulla of Vater, and (g) intestinal stasis; (4) by the lymphatic route, especially by means of the lymphatics of the gallbladder and its neighboring structures; (5) by way of the blood stream, i. e., occurring in the course of acute infectious diseases; and (6) from unknown causes bringing about proteolytic pancreatic activity.

Probably due to the rarity of this condition as compared with the frequent occurrence of so many of the acute abdominal diseases, the physician or surgeon of even a few years ago was prone to overlook a case of acute pancreatitis. The average physician and surgeon has developed a more or less acute consciousness of pancreatitis and are not as baffled as before. From a clinical standpoint, physicians observe (1) the transient or usually milder form, and (2) the culminating or catastrophic form which runs a stormy and frequently fatal clinical course.

In the ultra-severe or catastrophic type the most striking symptoms are pain and shock. The former is usually agonizing and constant, with but little interval between the paroxysms, and is seldom controlled by morphine. The pain generally originates in the upper abdomen, most often in the epigastrium and right abdominal quadrant, radiating to the left or the right of the median line and then gradually over the entire abdomen, and is preceded as a rule by a general abdominal soreness.

Radiation to the back occasionally occurs. In this type of case, intense pain has been a constant factor. Profound shock and collapse, accompanied by an increased rapid pulse rate with a distinct fall in blood pressure, soon ensues and the patient becomes markedly prostrate. Early circulatory collapse is pronounced and the presence of cyanosis and dyspnea with a fairly good pulse and without demonstrable cardiac or pulmonary cause is typical of this form of acute pancreatitis. As a rule nausea and vomiting is persistent and gastric lavage or medication rarely give relief.

A mass may or may not be present; as a rule it is absent. Distention is usually greater than muscular rigidity although the latter is always present to a certain extent, more pronounced in the epigastrium and the upper quadrants and to a lesser degree in the lower quadrants.

Leukocytosis is variable but in most cases is fairly elevated. Glycosuria is a most inconstant and fairly rare occurrence, but when found, is of extreme diagnostic importance. The presence of hyperglycemia is of great significance and should be investigated in all cases of suspected pancreatitis.

The subacute cases embrace those which present a longer duration and which rarely present an acute course. The patient is often seen in an intoxicated condition due to peritonitis or multiple abscess formation. The presence of an epigastric mass is often noted in this type.

The rise in serum amylase is almost always due to complete or partial obstruction of the main pancreatic duct. In acute pancreatitis, the onset of symptoms is accompanied almost simultaneously with a rise in serum amylase. Usually there is an abrupt rise, most often reaching its peak within the first 48 hours, but sometimes within 4 to 6 hours.

The duration of serum amylase elevation seems to have some prognostic value. Transient elevation, which returns to normal or sub-normal values within 2 to 3 days after the peak has been reached, is thought to be associated with pancreatic edema. In other cases the elevation may persist with a gradual drop in serum amylase over a period of many days. In these cases extensive necrosis of the pancreas may have occurred. However, a precipitous drop is not always a sign of improvement but may mean that extensive necrotic distribution of the pancreas has occurred within a short period of time.

When an amylase level of 150 units or more is associated with acute abdominal pain, the presence of acute pancreatitis should be strongly suspected. It should be emphasized, however, that the rise in serum amylase is not confined to acute pancreatitis. An increase usually accompanies inflammatory conditions of the parotid and salivary glands, and less often follows the use of codeine and other opiates. Very occasionally, an increase may be noted in cases of renal insufficiency, carcinoma of the pancreas, and perforated peptic ulcer.



There is no question but that amylase determinations have been of great advantage in diagnosis, and that the use of antibiotics (especially penicillin, sulfanilamide, sulfadiazine, and streptomycin) has altered the line of treatment. It must be borne in mind, however, that cases will be seen which may demand surgical procedures. Unless there has been a definite diagnosis of acute pancreatitis, it is better to explore than to take the chance of the condition being of another nature. Each case must be considered as a problem and treatment must be carried out in accordance with the surgeon's best judgment. In every case presenting pain in the upper quadrants, estimation of the blood sugar and amylase should be obtained. This may be of the greatest diagnostic help. (Am. J. Surg., Dec., 1954; J. L. Donhauser, M.D., Albany Medical College, Albany, N. Y.)

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#### Primary Cancer of the Breast

In 100 consecutive women with primary cancer of the breast, some will be apparently operable when first seen, some questionably operable, and some frankly inoperable. The proportions naturally vary in different localities, but in most reported series, about 60% of cases fall into the first or apparently operable group, and about 40% into the other two groups.

In the operable group, radical surgery results in some 80% five-year survivals when the axillary lymph nodes are negative for tumor, and in about 30% such survivals when the lymph nodes are positive. Therefore, in this favorable group, there are some 30 women whose tumors are arrested for five years; of these, about 19 had negative lymph nodes (and would presumably have survived by simple operation alone), and about 11 had positive lymph nodes (and, therefore, represent an apparent salvage by the radical procedure).

Radical surgery is contraindicated in most of the questionably operable, and in all of the frankly inoperable cases. It may hasten the spread of fresh cancer emboli throughout the chest wall and body, and will actually shorten survival time in some patients.

There are, therefore, about 11 out of the 100 cases in which the radical operation is of significant value in terms of survival. This group will contain some patients with radiosensitive growths and some with radio-resistant ones. The authors believe that adequate postoperative radiotherapy will do more for the axillary lymph nodes in those members of this group with radiosensitive lesions than will radical dissection of the axilla. It will not spread neoplastic cells; it should destroy or suppress tumor. Conversely radical dissection will do more for those members of the group with radioresistant lesions.

The question, therefore, is, what is the proportion of radiosensitive and radioresistant tumors in this hypothetical group of 11 patients? If it is equally divided, either method should give equal end results in terms of over-all salvage. If radiosensitive lesions predominate, simple operation plus postoperative irradiation will have more to offer than radical surgery.

Because the radiosensitivity of lesions is not determinable prior to treatment, and because surgical removal is a more certain method of eradicating a localized (i. e., removable) breast cancer than is radiotherapy, it is advisable that surgery be used to remove the primary lesion in all apparently operable cases; it permits identification of the tumor, serving as an excisional biopsy with minimum chance of disseminating disease.

The 5 and 10-year survival rates in properly selected "operable" cases are essentially the same whether the treatment be radical mastectomy or simple mastectomy and postoperative radiotherapy. The radical procedure is still preferable to the simple operation in a special group of patients with operable lesions (the very obese woman, the apical tuberculous, and the unstable individual who will probably fail to complete her postoperative therapy course).

Patients with presumed internal mammary lymph node involvement (especially those with central or inner quadrant tumors) probably should have additional radiotherapy to this area.

The place of simple mastectomy and vigorous postoperative radiotherapy in the treatment of primary operable cancer of the breast appears to be well established. Where skilled radiotherapeutic service is available, the author believes it is the method of choice in most cases seen in practice today. It still remains to be confirmed that late recurrences in the chest wall and axillary areas are no higher with this combined procedure than they are with the radical operation. If this does not eventuate, the procedure will require re-evaluation.

The long term control of cancer of the breast, in terms of absolute ten-year survival rates, is as good with the simple procedure plus adequate radiotherapy as it is with the radical procedure; there is some evidence to suggest that, under average conditions of practice, it is actually better.

The physical comfort of the average woman treated by simple operation and postoperative radiotherapy appears to be greater than after the radical procedure. However, either method still fails to cure a majority of women with breast cancer today. (Roentgenology, Dec., 1954; L. H. Garland, M. D., Stanford University Medical School, San Francisco, Calif.)

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### Automobile Collision Injuries

An important step in the campaign for greater safety in highway travel is the study of the causes of injury in automobile accidents. The accumulation of data regarding the nature, location, and source of these injuries will provide a basis for the development of adequate protective measures; related to the details of the various accidents, this information will also aid in the identification of hazards in the design and structure of automobiles. The successful completion of this study requires the pooling of data from many observers.

An account of the findings in a series of patients who were injured in automobile collisions is presented in this report. A total of 3196 injuries, as classified in this study, occurred in a group of 1475 patients. There were no fatalities.

Multiple injuries were found in approximately three-fourths of the drivers, two-thirds of the passengers in the front seat, and three-fifths of the passengers in the rear seat.

Almost three-fifths of the total number of injuries were abrasions and contusions. Approximately one-eighth of the injuries were those of whiplash effect on the neck, while approximately one-fifth of the total number were strains or sprains in other locations. Approximately one in three of the injuries involved the head and neck, one in ten the chest, one in five the arms and shoulders, and one in three the back or legs and pelvis.

The injuries of the drivers were principally those of the head and neck, arms and shoulders, or back, while those affecting the passengers, whether occupants of the front or rear seats, were predominantly injuries of the head and neck, arms and shoulders, or legs and pelvis.

The principal cause of injury in this series of patients appeared to be uncontrolled motion of the occupant in relation to that of the automobile. This factor has been the subject of recent comment by Schaefer and by Campbell. In abrupt deceleration, as in a head-on collision, the occupant continues to move forward at approximately the velocity of the automobile in the instant preceding the accident, until he is stopped by impact against the steering wheel, wind-shield, or dashboard. The rate of deceleration of the occupant under such circumstances may be many times greater than that of the acceleration of gravity. In abrupt acceleration, as in a collision from the rear, the automobile is thrust forward beneath the occupant. A whiplash injury results when the head and neck are snapped backward, or when such hyperextension is overcorrected. These mechanisms may be combined in the multiple collisions which often occur in heavy traffic.

Various measures have been suggested to provide protection against these effects of acceleration. The seat belt is a well-known example. Securely anchored to the frame of the automobile, such a device can hold the occupant firmly and squarely in the seat, literally forcing him to wear

the automobile as a suit of armor. The use of the seat belt in aircraft and in racing cars has already established its value, but while its installation involves little cost or effort, it has yet to find wide acceptance.

The adoption of other suggested measures requires appreciable change in the automobile. A representative listing includes: elimination of all sharp edges and projections; adoption of push-button controls and recessed fittings; generous use of padding throughout the automobile; use of plastic or of "popout" windshields; installation of a flexible joint in the steering column which will yield under pressure, or the adoption of aircraft-type levers in place of the steering wheel; installation of non-rigid dashboards; elevation of the backs of the seats, to support the head and neck; use of locking or anchoring devices on all seats; installation of periscope rearview mirrors; use of body construction material which will deform or absorb the force of impact; installation of "oleo" shock-absorbing bumpers. Woodward has already emphasized many of these recommendations.

A change in the design or structure of automobiles is a matter of considerable expense. Such steps are not likely to be taken by manufacturers until the needs for specific protection are established by adequate study. The accumulation of data from many observers, preferably in suitably standardized form, is, therefore, of great importance. The findings in the present analysis provide a cross-section review of nonfatal collision injuries in an area where high-speed driving is probably exceptional. There is need for additional studies from other areas, where road conditions or driving practices differ, before valid conclusions can be drawn. (Surgery, Dec., 1954; R. G. Livingston, M.D., Cambridge, Mass.)

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#### Treatment of Nonpenetrating Abdominal Injury

No lesion requires closer observation or more careful judgment in the selection of treatment than that following nonpenetrating abdominal trauma. Such trauma may cause any and all types of injury to both solid and hollow viscera. With the increasing number of automobile, industrial, and other accidents, the problem is rapidly becoming one of major importance. In spite of increasing frequency of this type of injury, each case is completely different from others, and the diagnosis and treatment should be based on the clinical manifestations.

Therefore, no hard and fast rules can be applied in managing these highly individualized problems. The difficulties are only slightly simplified by the fact that even in cases of nonpenetrating abdominal trauma, there are certain criteria that demand immediate surgical exploration. The roentgenographic demonstration of free air in the abdomen is perhaps the **clearest** indication for immediate laparotomy. A rapidly falling red



cell count is equally important. Rapidly increasing tenderness accompanied by increasing leukocytosis must not be ignored.

It must be stated at the onset that, if there is a reasonable doubt as to the integrity of the bowel, and if the patient is a fair operative risk, an exploratory laparotomy should be performed. To operate early will not increase the risk materially, and it often will simplify the treatment of a lesion that may become very complex, after the passage of 6 to 8 hours, owing to edema and spreading peritonitis.

The first step is a careful history and physical examination. To suspect the existence of these intra-abdominal lesions is a long step toward their recognition. These lesions may follow the most trivial of injuries, as brought out in a case report. They may follow mild juggling action on the back seat of an automobile, or other minor trauma. Physical examination is essential, because it may at once reveal an abdominal lesion and it establishes a baseline for future examinations.

The second step is a complete roentgenologic examination. This must include the pelvis, the spinal column, and the thoracic cage. A roentgenogram of the abdomen should be made to determine whether or not free air is present beneath the diaphragm. The patient seldom is so severely injured that a scout film of the abdomen cannot be made in order to detect the presence of free air. Fractures of the ribs or vertebrae often lead to abdominal distention and at first give the impression that an intra-abdominal lesion exists. Fractures of the pelvis will put the physician on guard for rupture of the bladder or urethra.

The third step is immediate catheterization of the patient, if he is unable to void. Gross blood in the urine usually means injury of the urethra, bladder, or kidneys, and must be further investigated.

The fourth step is a complete blood count. This may be of relatively little value soon after an injury but establishes a valuable baseline for future comparisons.

Fifth, because most of these patients are in a moderate degree of shock, whole blood typed should be crossmatched so as to be immediately available during the operation which is likely to follow.

Sixth, in cases in which immediate diagnosis is not possible a Wangenstein suction tube must be introduced to prevent further abdominal distention which will tend to further obscure an already confusing clinical picture.

Seventh, it is vitally important that repeated, careful examinations should be made at short intervals by the same surgeon.

When to operate on a patient who has received a blow on the abdomen, who does not have free air in the abdomen, or a ruptured bladder, but who does have abdominal pain with moderate rigidity is the \$64 question. It is believed that a delay of 2 or 3 hours is not harmful if the surgeon is in doubt, as is usually the case. Morphine is definitely contraindicated during this period.

At the end of this time, the same surgeon, or surgeons, should re-examine the patient, and laboratory tests should be repeated. Increasing abdominal pain and rigidity demand an exploratory operation. Changes in both the red cell and white cell counts may be of great significance, as may changes in the abdominal findings. This is the reason it is so important that the same surgeon see the patient frequently until the diagnosis is established. Only he can properly evaluate any change in the clinical picture, and his opinion is worth much more than that of a consultant who is called in as a last desperate measure to help throw light on the very confusing picture which is usually present 6 to 12 hours after injury.

When the abdominal injury is the only one, it is probably safer to operate when in doubt. If it is one of several serious injuries, especially of the chest or skull, then the indications for operation must be clear before a laparotomy is performed. In cases of multiple injuries, it is perhaps safe to delay operation and to observe the patient closely for periods up to 6 to 8 hours. Then, if the abdominal symptoms and findings progress, the surgeon may be forced into a high-risk laparotomy to save the patient's life. In any case, the surgeon or surgeons in attendance should, at the end of 6 or 8 hours, if they have carefully and repeatedly examined the patient and correlated the clinical findings, be able to decide whether or not to operate.

When the decision has been made to perform an exploratory laparotomy, it is only common sense and of utmost importance that the state of shock be corrected as well as possible and that adequate blood for transfusion be available in the operating room. Occasionally, the rapidly bleeding patient who is in deep shock may require simultaneous transfusions in two or three, or even four extremities before his condition can be brought to a point where he will withstand operation.

It must be remembered that nonpenetrating and penetrating trauma can cause exactly the same lesions. Each injury should be treated according to well-established surgical principles. (Postgrad. Med., Dec., 1954; C.M. Burgess, Straub Clinic, Honolulu, T.H.)

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### Early Treatment of the Neurogenic Bladder

In World War I, 60% of the spinal cord injury cases who survived their initial trauma, died of urinary tract infection. With a better understanding of bladder physiology and the introduction of chemotherapeutic agents and antibiotics, this mortality rate was reduced to 15% in World War II. The figures for the Korean War are not yet available. With proper management, the morbidity and mortality from urinary tract



infection in paraplegia can still be much further reduced, and these unfortunate individuals can be restored to a satisfactory and productive life.

Nesbit and Lapidès classify the neurogenic bladder into five groups depending upon the location of the lesion. This classification is neurologically sound, but in gunshot wounds of the spinal cord, the lesions are frequently incomplete and produce mixed and bizarre types of neurogenic disease of the bladder.

The uninhibited neurogenic bladder. In this type there is a loss of cerebral inhibition over reflex bladder contractions. The reflex neurogenic bladder. This type results from complete transection of the spinal cord or from gross lesions which are comparable to transverse myelitis. The autonomous neurogenic bladder. This occurs when both limbs of the primary reflex arc are destroyed by lesions of the sacral cord, conus, or cauda equina, of both motor and sensory roots in the sacral plexus. The sensory paralytic bladder. This occurs when the sensory limb of the segmental or suprasegmental reflex arc is interrupted. The motor paralytic bladder. This is due to interruption of the motor pathway in the segmental or suprasegmental arc. Acute anterior poliomyelitis is the primary cause of this type of bladder.

Following injury, an urethral catheter should be inserted under sterile precautions before the bladder overdistends. A small Foley catheter (16F. - 18F.) should be used. The use of a large catheter may induce trophic ulceration of the urethral mucosa from pressure with secondary periurethral abscess. Intermittent catheterization should never be used where these facilities are available. Tidal drainage or intermittent manual irrigation are equally effective. Subey's "G" solution or 1/8% phosphoric acid solution are excellent irrigating media.

Fluid intake should be measured and forced to 3000 cc. daily. Testosterone seems to have a beneficial effect in conserving nitrogen; under this therapy, trophic ulcers heal more rapidly, the patients look better and experience a feeling of well being. If phosphates are present in the urine, intramuscular hyaluronidase will decrease the turbidity. All patients with indwelling catheters show some pyuria. If this is excessive, appropriate antibiotics should be administered following urine culture and sensitivity tests. In the absence of any other findings to explain febrile episodes, they must be attributed to pyelonephritis and treated accordingly. The usual localizing signs of this condition are absent because of the level of anesthesia.

Intolerance of the urethral catheter, manifested by severe urethritis, periurethral abscess, or epididymitis, is indication for suprapubic cystostomy. The catheter should be changed only when incrustations appear in the lumen. As recovery from the spinal shock phase occurs, the patient is aware of vague discomfort during bladder irrigations. He can now be given a test of reflex voiding by removal of the catheter or clamping

the suprapubic tube. If unsuccessful after a few hours, drainage is again instituted. The authors found that cystometric studies were not too helpful as a gauge of returning bladder function.

Because the care of the paraplegic is a joint professional responsibility, weekly rounds by a paraplegic board, consisting of a neuro-surgeon, urologist, and psychiatrist, with such other medical officers as may be involved in the care of the patient, are useful in reviewing the progress of the patient and planning future therapy. (Mil. Surgeon, Dec., 1954; Col. J. W. Schwartz, MC USA, Walter Reed Army Medical Center, Washington, D. C.)

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### The Intermediate Coronary Syndrome

The intermediate coronary syndrome may be defined as a complication of coronary heart disease in the nature of an acute attack which is distinguishable from the anginal syndrome by an evaluation of the pain and distinguishable from myocardial infarction by the absence of the characteristic symptomatology of infarction. This syndrome is limited to cases in which the predisposing factor is coronary atherosclerotic heart disease, and the precipitating factors may be obvious or obscure. The characteristic symptomatology includes pain, nonspecific electrocardiographic changes, minimal or equivocal systemic effects, and little, if any, evidence of circulatory failure.

Differentiation from the anginal syndrome is usually easy because symptoms either develop spontaneously, or there is a dramatic decrease in exercise tolerance from one day to the next. Differentiation from myocardial infarction is based mainly on the absence of electrocardiographic alterations, considered to be pathognomonic, or nearly so, of myocardial infarction, and the absence of systemic effects or a friction rub attributable to myocardial necrosis.

The clinical course is usually short and ends with recovery or the development of further injury, usually infarction. The treatment should include the relief of any obvious precipitating factor, the possible use of anticoagulant drugs, and a period of observation beyond which complications are unlikely.

The advantages in differentiating this middle category of cases of coronary heart disease include: (1) the possibility of defining more sharply the anginal syndrome and myocardial infarction, and (2) the stimulation of interest in the early recognition and treatment of complications of coronary heart disease which are not likely to end in infarction.

The term intermediate coronary syndrome meets the clinical requirement in designating these cases. (U.S. Naval School of Aviation Medicine, NAS, Pensacola, Fla.) NM 001 059.06.09, 15 September 1954.



### Retirements

Captain Clarence L. Blew, MC USN, was transferred to inactive duty on the Temporary Disability Retired List of the Navy effective December 1, 1954. He was retired with the rank of Rear Admiral, MC USN.

Admiral Blew entered the Navy as a Lieutenant, junior grade, Medical Corps, in June 1929. He served, during World War I, with the Marines in France and has received the Purple Heart Medal for wounds sustained in action.

Admiral Blew received his Bachelor of Science degree from Kansas University in 1921, and the degree of Doctor of Medicine from the same school in 1925. He interned at the Montreal General Hospital, Montreal, Canada, and received post-graduate instruction in ophthalmology at Washington University School of Medicine in St. Louis.

A member of the American Medical Association, Admiral Blew served, during his active Naval service, at the Naval Hospitals at Great Lakes, Illinois; Puget Sound, Washington; Bainbridge, Maryland; and Philadelphia, Pennsylvania. He was Executive Officer of the Naval Hospitals at Pensacola, Florida; Memphis, Tennessee; and Annapolis, Maryland; as well as Executive Officer of the Hospital Corps School, Bainbridge, Maryland.

Captain Thomas W. McDaniel, Jr., MC USN, was placed on the Retired List of the Navy on December 1, 1954.

Captain McDaniel received his Bachelor of Arts degree from Ouachita Baptist College in 1925; his Master of Science degree from Little Rock College, Little Rock, Ark., and the degree of Doctor of Medicine from the University of Arkansas School of Medicine in 1931. He attended a postgraduate course in Internal Medicine at the University of Pennsylvania School of Medicine, 1938-1939.

Captain McDaniel served in the USS Gold Star; at the Naval Station, Guam; with Mobile Base Hospital #1 during World War II; at the Marine Corps Recruit Depot, Parris Island, S.C.; as Officer in Charge of the Navy Unit at the Public Health Service Hospital, Fort Worth, Tex., and in the Naval Hospitals at Puget Sound, Wash.; Mare Island, Calif.; Philadelphia, Pa.; Washington, D. C.; Bethesda, Md.; and San Diego, Calif.

Captain McDaniel is a member of the American Medical Association and the American Psychiatric Association; and a Diplomate of the American Board of Psychiatry and Neurology. His address in retirement is 313 Rivercrest Drive, Fort Worth, Texas.

LCDR Carol M. Pfeiffer, Nurse Corps, USN, was transferred to inactive duty on the Temporary Disability Retired List of the Navy on Dec., 1, 1954.

A native of Hartford, New Jersey, LCDR Pfeiffer graduated from the Pennsylvania Hospital School of Nursing, Philadelphia, in 1931. She entered the Navy in 1934, and received the degree of Bachelor of Science in Nursing Education from Catholic University, Washington, D. C., in 1952. She attended a short course in "Nursing Team Organization and Functioning" at Teachers College, Columbia University, New York City, in 1953.

During her active Naval service, LCDR Pfeiffer served with Naval Base Hospital #2 and Mobile Base Hospital #6; at the Naval Dispensary, Navy Department; at the Naval Training Center, Gulfport, Miss.; and in the Naval Hospitals at League Island and Philadelphia, Pa.; Annapolis and Bethesda, Md.; Great Lakes, Ill.; Seattle, Wash.; and St. Albans, N. Y.) (TIO, BuMed)

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Training Course in Special Weapons, Isotopes,  
and Military Medicine for Reserve  
Medical and Dental Officers

The fourth annual course, "Special Weapons, Isotopes, and Military Medicine," will be sponsored by the Inspector, Naval Medical Activities, Pacific Coast, and presented by the Commandant, Twelfth Naval District, during the period 28 February - 4 March 1955, at the U. S. Naval Station, Treasure Island, San Francisco, Calif.

This course has been arranged to provide Reserve Medical Department officers of the Armed Forces the latest information to be employed in the many and varied aspects of special weapons, isotopes, and military medicine and dentistry. Each subject will be presented by a speaker of prominence in the specialty concerned.

Eligible Reserve officers will receive retirement point credits, on the basis of one (1) point for each day of attendance. Reserve Medical Department officers desiring point credits for attendance must obtain authority and appropriate orders to assure accreditation. Officers who hold appropriate duty orders, and a limited number of officers in the Active Status Pool, may be issued orders to active duty for training with pay. A tentative program and applications for active duty training and/or authorized orders will be mailed prior to 1 January 1955.

Naval Reserve Medical Department officers who have performed fourteen (14) days active duty for training, with or without pay; retired officers; or officers on the Inactive Status List are invited to attend this course without orders and will not receive retirement point accreditation.

Although this course is intended primarily for Naval Reserve Medical Department officers of the Pacific Coast, active duty personnel are invited to attend, as well as other components of the Armed Forces, the Public Health Service, and Civil Defense personnel. (DMO, 12th N. D.)



### Medical Military Training Program

The Naval Medical School, National Naval Medical Center, Bethesda, Maryland, will conduct the fifth two-weeks course in Medical Military Training for the primary benefit of reserve officers of the Medical Departments of the Armed Forces on inactive duty, 7-19 March 1955.

The first week of this course is devoted primarily to the medical aspects of special weapons and radioactive isotopes, with emphasis on the basic concepts of atomic medicine. The second week is a medico-military symposium aimed at informing reserve personnel concerning the Medical Reserve programs and the activities of the Medical Departments in general, presenting recent advances in military medicine, including aviation, submarine, and field medicine. A panel discussion of the Army, Navy, and Air Force Reserve Medical Programs will be included. The subjects will be presented by speakers of outstanding prominence in their specialties. Hence, a most interesting and informative program is assured.

It is considered undesirable for officers who have attended this course within the past year to attend this year, as the change in subject matter from one year to the next is not sufficient to warrant repeating the course at such short intervals.

Naval Reserve Medical, Dental, Medical Service, Nurse, and Hospital Corps officers on inactive duty in the First, Third, Fourth, Fifth, Sixth, Eighth, and Ninth Naval Districts, and PRNC, who desire to attend this course in a pay or non-pay status, should submit their request to their commandant for appropriate active duty for training orders at the earliest practicable date. Officers of these corps attached to pay units of the Naval Air Reserve should submit their request to the Chief, Naval Air Reserve Training. A quota providing for attendance at this course in a pay status has been assigned each of these commands.

Meals will be available in the Commissioned Officers' Mess (Open) and the general mess. Accommodations in the Bachelor Officers' Quarters will be very limited and will be allocated on a first come, first served basis.

Reserve Medical Department officers on inactive duty who have not attended this course during the past year are urged to avail themselves of this excellent training. (ResDiv, BuMed)

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Please forward requests for change of address for the News Letter to: Commanding Officer, U.S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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Reserve Selection Board for Promotion  
to Lieutenant Commander

A selection board is tentatively scheduled to convene at the Navy Department, Washington, D.C. on or about 15 February 1955, to recommend Naval Reserve Medical, Medical Service, and Nurse Corps officers for promotion to lieutenant commander. Officers eligible for consideration by this board are those lieutenants whose date of rank is prior to 1 July 1951, and who: (1) are on inactive duty in an active status and who earned a minimum of 12 retirement points during fiscal year 1954; or (2) are on active duty in the TAR program; or (3) report for active duty on or after 1 July 1954.

Officers who are within the above promotion zones should take individual action to insure that fitness reports for training duty, annual fitness reports, and annual qualification questionnaires covering periods ending prior to the convening dates are submitted to the Bureau of Naval Personnel in time to be included in the officers' records when presented to the selection board. Special fitness reports are not required; however, any officer eligible for consideration for promotion by a selection board shall have the right to forward through official channels a written communication inviting attention to any matter of record concerning himself which he deems important to his consideration. The communication may not criticize or reflect upon the character, conduct, or motive of any other officer.

Naval Reserve medical officers on inactive duty from different geographical sections of the country will constitute the majority membership of this board. (ResDiv, BuMed)

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Request for Obsolete Issues of  
Hospital Corps Handbook

The Commanding Officer of the Hospital Corps School, USNH, Great Lakes, Illinois, proposes to establish a historical exhibit of prior issues of the Hospital Corps Handbook and related material that might be of historical interest to the students. Hospital Corps Handbooks published prior to 1939 are desired.

Owners of such old books or other historical matter who desire to donate such material are requested to communicate with the commanding officer, U.S. Naval Hospital Corps School, USNH, Great Lakes, Ill.

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Medical Correspondence Course -  
Combat and Field Medicine

The Medical Department correspondence course, "Combat and Field Medicine Practice," NavPers 10706 (1954 Revision, from thesis to objective type questions), is now available for distribution to eligible applicants.

The purpose of this course is to train and instruct Medical Department personnel in the problems of combat and field medicine. The text material provides information regarding the medical aspects of amphibious warfare, care of battle casualties, field sanitation, insect control, water supply, chemical warfare agents--their characteristics and actions--and the correct treatment for various chemical warfare casualties along with classification of casualties.

This course consists of eight (8) objective type assignments and is evaluated at twenty-four (24) Naval Reserve promotion and non-disability retirement points. Personnel currently enrolled in the old thesis type course will receive promotion and retirement points authorized at the time of enrollment. (NavMedSch, NNMC, Bethesda)

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From the Note Book

1. Rear Admiral D. W. Ryan, DC USN, Assistant Chief for Dentistry and Chief of the Dental Division, Bureau of Medicine and Surgery, will leave Washington on January 16, 1955, to visit Naval dental facilities at Coco Solo, C. Z. ; Trinidad, B. W. I. ; San Juan, P. R. ; Guantanamo Bay, Cuba; and Key West, Florida. Rear Admiral Ryan will return to Washington, D. C. on February 7, 1955. While in San Juan, P. R. , he will present a lecture at the annual meeting of the College of Dental Surgeons of Puerto Rico. (TIO, BuMed)
2. BuPers Instruction 1210.4A of Nov., 15, 1954, has revised and consolidated the definition of certain billet and officer designator codes. One of those affected is that to be used for designating dental students under instruction as prospective Dental Corps officers. Formerly known as Ensign 1135, the new designator is called the Ensign 1995.
3. Naval Reserve Dental Company #8-5 of Dallas, Tex., held a training period meeting and dinner at Baylor University Hospital on Dec., 7, 1954. Dr. J. J. Addison presented a motion picture in sound and color called, "Hazards of Dental Radiography." A special program was also held on Dec., 8, 1954, at which Lt. C. Ochsenbein, DC USNR, of Austin, presented a thesis and clinic on "A Practical Peridontal Application for the General

Practitioner with Emphasis on Restorative Dentistry following Treatment." CDR P. J. Murphey, DC USNR, is the commanding officer of Naval Reserve Dental Company #8-5. (TIO, BuMed)

4. The contributions of a young Naval laboratory technician loaned to the Osaka National University, Osaka, Japan, for the purpose of indoctrinating technicians in the Medical School's Central Clinical Laboratory, has attracted much attention among medical circles in Japan. William L. Jones, Hospital Corpsman First Class, of the U.S. Navy Fleet Epidemic Disease Control Unit No. Two, taught the medical technicians methods he had learned as a Naval Laboratory Technician. These methods, as Dr. Miyaji, Pathologist at Osaka National University, explained, "were found more accurate and simple than had been carried out in this country hitherto;" Jones . . . "has done a three months' job in one month, making the almost impossible, possible, despite the barrier of language." (TIO, BuMed)

5. A dependable, inexpensive, easily portable apparatus, for making direct blood pressure readings, has been developed by the Laboratory of Technical Development of the National Heart Institute. This device, when attached to a conventional electrocardiograph, produces accurate pressure recordings formerly available only by the use of costly and complex instruments. (PHS, H. E. W.)

6. The National Bureau of Standards has recently completed an investigation of the attenuation of gamma radiation incident obliquely on barriers of lead, concrete, and concrete-equivalent material. This study, sponsored by the Atomic Energy Commission, was conducted by F. S. Kirn, R. J. Kennedy, and H. W. Wyckoff of the Bureau staff. The results indicate that considerable error may be involved in some estimates of protective barrier thickness necessary to produce a specified attenuation. Estimates based on attenuation data for normally incident radiation were found to be several half-value layers low for obliquely incident radiation of the same energy. (NBS, Summary Technical Report 1893)

7. It has been demonstrated that suitably prepared extracts of the spleen of individuals deceased from generalized carcinomatosis, will give rise to flocculation reactions when mixed with sera of individuals suffering from malignancies. The results are encouraging enough to consider the test a satisfactory preliminary step in the establishment of a "diagnostic cancer test." (J. Nat. Cancer Inst., Dec., 1954; W. F. Eisenstaedt. M. D.)

8. A new medium has been developed for culturing tubercle bacilli. The essential ingredients used are inorganic salts, glycerine, asparagine, and activated charcoal. The advantages of the charcoal agar medium include



economy, reproducibility, ready availability, ease of preparation, and stability to sterilization in the autoclave. (Am. Rev. Tuberc. Dec., 1954; J. G. Hirsch)

9. Nitrofurantoin was highly effective in the treatment of chronic urinary tract infection following prostatectomy. Treatment resulted in an abrupt fall in the number of bacteria in the urine. The drug was most effective against infections with E. Coli and B. Proteus. (J. Urol., Dec., 1954; J. W. Draper, R. ZuFall, L. T. Rosenberg, and V. Knight)

10. An evaluation of urologic problems from a medicolegal point of view appears in J. Internat. Coll. Surgeons, Nov., 1954; L. P. Wershub, M. D.)

11. Diagnosis of stomach lesions by means of the electrogastrogram is discussed in Canadian Services, Med. J., Dec., 1954; H. S. Morton, M. Sc., M. B.

\* \* \* \* \*

BUMED NOTICE 1500

3 December 1954

From: Chief, Bureau of Medicine and Surgery  
To: All Continental Activities Having Dental Personnel Regularly  
Assigned

Subj: Dental technician in-service training program; training of  
instructors for

Ref: (a) BuMed Inst. 1510.5

This Notice acquaints addressees with the advantages of training given at the various Navy instructors schools for preparation of instructors in the dental technician in-service program.

\* \* \* \* \*

BUMED NOTICE 6310

3 December 1954

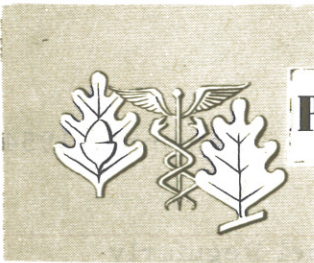
From: Chief, Bureau of Medicine and Surgery  
To: All Ships and Stations Having Medical Personnel Regularly  
Assigned

Subj: BuMedInst 6310.3 Ch 3 (Instructions and definitions relating to  
certain diagnostic titles, Individual Statistical Report of Patient,  
and Morbidity Report)

Encl: (1) Subject change

This Notice clarifies the term "Personnel admitted to sick list away from their duty station," and provides a replacement page 28 and a new page 28a for enclosure (1) of BuMedInst 6310.3.

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## PREVENTIVE MEDICINE SECTION

### Reference Publications

If medical department personnel are to be familiar with the many standards related to preventive medicine they must be familiar with numerous publications. A reference bibliography has been prepared to assist them in learning these standards and the responsibilities of the medical department related thereto. References applicable to broad preventive medicine functions in all types of activities are:

<u>Subject</u>	<u>Reference Numbers</u>
Health Standards - - - - -	9, 10, 19
Training of Food-Service Personnel - - - - -	3, 5, 11
Safety Precautions - - - - -	8, 9, 10
Sanitary Inspections - - - - -	1, 9, 10
Quarantine - - - - -	2, 9
Communicable Disease Control - - - - -	9, 10, 18
Venereal Disease Control - - - - -	9, 10, 13



Reference Publications (Continued)References on Selected Subjects of Particular Interest to Preventive Medicine Personnel in the Field

		US SHIPS	MSTS SHIPS	NAVAL STATION	MARINE CORPS STATION
FOOD SERVICE	General Mess	51, 52	51,52,53	43,49,51	14,43,49,51
	Open and Closed Messes and Clubs	1		4, 7, 43	14, 43
	Exchanges	16, 17	16, 17	16, 17	14
	Civilian Cafeteria			20	20
WATER AND SEWAGE	Water Supply and Sewage Disposal	27, 28, 31		37, 39, 46	
REFUSE	Garbage and Rubbish Disposal	24, 52	24	32, 50, 51	32
	Disposal of Garbage by donation or sale	50,51,52	50,53	50,51	14
SHELTER	Housing Assignment and Management			43	14, 43
	Transient (Hotel) Housing				14
	Brigs	6, 48		6, 44, 48	
	Protective Shelters			47	
VECTOR CONTROL	Pest Control	24		10, 33	33
	Laboratory Animals	9		9	
	Dog Pound, Pets, Wild Animals	2			
LAUNDRIES, BARBER SHOPS, AND BEAUTY SHOPS	When not operated by exchanges	23	23, 53	24,33,43	14,34,43
		24	24, 53		
SWIMMING	Pool water treatment; over-the-side	24		38	14, 38
Construction and repair of all Permanent Facilities		21, 22, 23, 25 26, 29, 30		36, 38, 40, 41 42, 45, 48	

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Reference Bibliography

1. U. S. Navy Regulations
2. General Order No. 20
3. SECNAV INSTRUCTION 4063.1
4. BUPERS Manual - C-9501 and C-9505 - Messes
5. NAVPERS 91921 - Instruction In Sanitary Precautions for Food-Service Personnel
6. NAVPERS 15825 - Brig Manual
7. NAVPERS 15847 - Manual for Commissioned Officers' Messes Ashore
8. OPNAV 34P1- U.S. Navy Safety Precautions
9. Manual of the Medical Department
10. NAVMED P-126 - Manual of Naval Hygiene and Sanitation (NAVMED P-5010 will supersede when published)
11. NAVMED P-1333 - Instructor's Guide, Sanitary Food Service
12. NAVMED P-5026 - Medical Compend
13. NAVMED P-1288 (Forthcoming Revision NAVMED P-5036) - Interviewer's Aid for V. D. Contact Investigation
14. Marine Corps Manual
15. Landing Party Manual, U.S. Navy
16. Navy Exchange Manual, Operation of Functions of Navy Exchanges
17. Navy Exchange Regulations
18. The Control of Communicable Diseases In Man (APHA)
19. NCPI 88 - Industrial Health Program
20. NCPI 65.4 - Food Services
21. BUSHIPS Manual - Chapter 33 - Life Preservers, Living and Berthing Equipment
22. BUSHIPS Manual - Chapter 34 - Commissary Equipment
23. BUSHIPS Manual - Chapter 35 - Laundry
24. BUSHIPS Manual - Chapter 36 - Sanitation
25. BUSHIPS Manual - Chapter 37 - Medical and Dental Appliances
26. BUSHIPS Manual - Chapter 38 - Ventilation and Heating
27. BUSHIPS Manual - Chapter 48 - Piping
28. BUSHIPS Manual - Chapter 58 - Distilling Plants, Sections I and II
29. BUSHIPS Manual - Chapter 59 - Refrigerating Plants
30. BUSHIPS Manual - Chapter 64 - Lighting
31. BUSHIPS Manual - Chapter 82 - Boats and Life Floats
32. NAVDOCKS TP-Pu- 1 - Refuse Disposal
33. NAVDOCKS TP-Pu- 2 - Pest Control
34. NAVDOCKS TP-Pu- 3 - Power Plant Water Conditioning, Chapter 4 - Internal Combustion Engines, Chapter 5
35. NAVDOCKS TP-Pw- 1 - Storm Drainage Systems
36. NAVDOCKS TP-Pw- 9 - Industrial Facilities
37. NAVDOCKS TP-Pw-12 - Water Supply Systems



Reference Bibliography

38. NAVDOCKS TP-Pw-13 - Special Services Facilities
39. NAVDOCKS TP-Pw-15 - Sewerage Systems
40. NAVDOCKS TP-Pw-16 - Storage Facilities
41. NAVDOCKS TP-Pw-17 - Training Facilities
42. NAVDOCKS TP-Pw-22 - Medical and Dental Facilities
43. NAVDOCKS TP-Pw-23 - Housing and Subsistence Facilities
44. NAVDOCKS TP-Pw-24 - Administration and Security Facilities
45. NAVDOCKS TP-Pw-30 - Maintenance and Operation of Public Works and Public Utilities
46. NAVDOCKS TP-PL-6 - Water Supply for Advanced Bases
47. NAVDOCKS TP-PL-8 - Personnel Protective Shelters
48. NAVDOCKS TP-TE-4 - Basic Mechanical Engineering
49. BUDOCKS Design Criteria No. 3 - Refrigeration
50. BUSANDA Manual - Vol. II
51. BUSANDA Manual - Vol. IV
52. BUSANDA Manual - Vol. VIII
53. NAVSANDA No. 236, MSTs Supply Instruction

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## Industrial Medicine

Acoustic Trauma: A Clinical and Laboratory Study

Acoustic trauma is a man-made problem. Nature has no sound sources that damage the ear. But industrial and military conditions expose the human ear to sound intensities for which it is not made, for which it is not prepared, and against which it is not protected.

More members of the armed forces are being exposed to explosions and gunfire and to loud sustained noises by airplane motors, jet engines, diesel engines and other noise-producing equipment. In industry, potential dangers to hearing arise from sustained excessive noises of machinery. The noises of the "jet age" pose a problem that is not yet clearly understood. Immediate laboratory and clinical observation are needed.

Through the use of a high speed motion picture camera, recordings have been made of the ears of experimental animals exposed to detonations. Rupture of the eardrum and fracture of the tiny bones inside were observed.

The ear possesses a series of protective devices against excessive sound. The most important protection is the acoustic reflex

of the middle ear muscles, which contract on acoustic stimulation. No effective treatment is possible once acoustic trauma has taken place and the nerve structures of the inner ear have been destroyed. It is therefore all-important to prevent acoustic trauma in the cochlea. A practical solution for industry is well within the realm of possibilities. Construction of less noisy machinery will help overcome this serious industrial hazard. (J. Internat. Coll. Surgeons, August 1954; H. G. Kobrak, M.D., Ph. D., Chicago, Ill.)

\* \* \* \* \*

### The Significance of Nonoccupational Disability in Industry

Work disabilities resulting from nonoccupational causes are a very important factor, in both decreasing the amount and increasing the cost of industrial production.

Absenteeism is divided into two types, namely, voluntary absences and involuntary absences. The former are due to reasons other than illness, while the latter are caused by personal ill-health. Voluntary work absences are reasonably constant in volume within any given employee body. In contrast, involuntary absences, almost always unexpected and unplanned, have durations which are usually indeterminate, at least at the onset.

Disabilities resulting in absence from work are usually considered under three principal classifications:

- (1) Occupational injury.
- (2) Occupational sickness.
- (3) Nonoccupational sickness or injury.

Category number (3), nonoccupational sickness or injury, is responsible for the major proportion of work absences of all types. Gafafer (U. S. Public Health Service), in studies on a number of varied reporting organizations, reports on the annual number of absences per 1,000 persons due to nonoccupational sickness and injury that are disabling for 8 consecutive calendar days or longer. For the 10-year period from 1941 through 1950, he reports an average incidence of 117.7 for males and 229.3 for females, the female rate being 195% of the male rate.

The total cost to industry of nonoccupational absenteeism may amount to as much as 1.8% of the total payroll of the industry.

Other over-all estimates place the total time lost each year by the Nation's industrial work force as the equivalent of 2 million men working full time for the entire year. (George F. Wilkins, M.D., Harvard Symposium on Industrial Health, 4 April 1953).

(NOTE--Continued efforts are necessary to reduce civilian employee



nonoccupational disabilities on naval stations. The magnitude of the problem indicates that the medical officer in charge of an industrial health program should work closely with management and the Office of Industrial Relations, especially the safety department, in a combined endeavor to lower the incidence of disabilities of this type.)

\* \* \* \* \*

### Environmental Medicine in Industry

The following quotations were taken from a paper given by C. Richard Walmer, M. D. on 8 December 1953 at the Mellon Institute, Pittsburgh, Pennsylvania. The paper presents an excellent general summary of environmental medicine in industry and is highly recommended for reading because of its applicability to naval industrial medicine:

"An effective environmental health program in industry is, of course, beneficial to the employee, the employer, and the community. To the employee, poor health means loss of wages, a reduced period of useful and productive capacity, and the need for making arrangements to provide for himself and his dependents when income fails. Ill, injured or improperly placed employees mean loss of service, decreased efficiency, low morale, and increased manufacturing cost to the employer. To the community, all of these factors mean decreased prosperity, increased welfare costs, and, perhaps, labor strife.

"The success of the medical program will depend largely upon the manner in which it is organized and administered. The industrial physician needs to be more than a good clinician. As a matter of fact, he must have qualifications and training which most good clinicians do not have. For example, he must be an extremely able administrator, and he must have the ability to fit into an organization and work with people. The industrial physician must have an understanding of production problems, the principles of management, and the essentials of personnel work. His clinical knowledge must include a great deal which the average physician in private practice does not ordinarily need to know, such as toxicology and the recognition of hazards in industrial environment. The physician concerned with environmental medicine in industry cannot make a proper preplacement examination unless he is familiar with the job, its physical demands, and its inherent hazards, as well as the physical capacities and limitations of the employee.

"Appropriate physical surroundings in the medical department, capable medical personnel, and efficient medical service foster the employee's and the job applicant's confidence in the company, thereby promoting the growth of a successful industrial relations program. In fact, the applicant for a job forms much of his first impression of the company during his pre-employment examination, and the sick or injured employee is particularly impressionable during his visits to the medical facility. The attitude of both toward the company can be influenced tremendously by the way the medical department receives them."

\* \* \* \* \*

## Insect and Rodent Control

### Precautions in the Use of Insecticides

The measures used in the control of insects and other arthropods require special precautions. Chapter 10 of the Manual of Naval Preventive Medicine, "Insecticides and Dispersal Methods," (NavMed P-5010-10) and "Pest Control" (NavDocks TP -Pu-2) should be used as supplementary references to the following discussion.

Basic Precautions. --Materials which are insecticidally effective are, with few exceptions, potentially toxic to humans; in certain instances, these materials are also either inflammable or explosive. This holds equally true for most of the solvents used in the preparation of insecticides. Paragraphs 14301 to 14313 of the U. S. Navy Safety Precautions Manual present the safety precautions necessary to the handling of solvents. All personnel who routinely mix, store, or apply insecticides should have full knowledge of the characteristics of the material being used (see NavMed P-5010-10, paragraphs 10-41 to 10-46). Such personnel should be fully aware of the danger the material offers to man and other animals and of the effect it may have on plants, finished surfaces, fabrics, and other materials. Further, they should have a knowledge of the adequate but safe application rates for the usual formulations employed. Normally, no serious effects will result to workers, or to human or animal populations exposed to the treated environments, if necessary precautions are followed and if formulations are accurately prepared and applied. Specific precautions to be observed in the use of insecticides are as follows:

1. Personnel.

Consult a physician immediately in the event of internal poisoning or of serious skin contamination. This should also be done in the event that nausea, vomiting, loss of weight, or loss of appetite should develop in personnel routinely using insecticides.

Bathe immediately if concentrated insecticides are spilled on the skin and/or clothing. Personnel routinely handling insecticides should bathe and change clothing at the end of each workday.



## 2. Use.

Read all labels carefully and comply fully with directions given thereon.

Wear special protective clothing such as coveralls and gloves when handling insecticide concentrates. During the field handling of insecticidal dusts, use a filter-type respirator approved by the Bureau of Mines; for insecticidal sprays containing solvents, use a charcoal-type respirator approved by the Bureau of Mines. Respirators do not provide adequate protection against high concentrations of dust and vapors encountered during formulation or mixing, or when applied over a prolonged period of time in confined spaces. Under such conditions, more positive protection is required; this can be accomplished through the use of an approved full face-piece air-line respirator, or with any of the approved self-contained breathing apparatus.

Do not use insecticides in the presence of open flames or very high temperatures. Discard solvent-soaked waste material in covered safety cans. Observe recommended fire prevention practices at all times.

Protect food, drinking water, and eating utensils from contamination.

## 3. Storage.

Store all pesticides in a safe and orderly manner. Containers should be plainly labeled. Items bearing a "poison" label should be kept locked up. Do not store in the vicinity of food.

Use special precautions when transporting insecticides to insure that they do not become available to unauthorized personnel.

Protective Devices and Clothing. -- The following protective items are listed in the Catalog of Navy Material:

1. Respirator, filter-pad half-mask (mechanical), Type C. Stock No. G37-M-315. Class 1 filter pads, color red, for Type C half-mask. Stock No. G37-R-97.

2. Respirator, twin-cartridge (chemical), half-mask, Type B-2. Stock No. G37-M-314. Filter cartridge activated charcoal refills for Type B-2. Stock No. G37-R-96.

3. Respirator, air-line mask, full facepiece. Stock No. G37-M-57-50. Filter cartridge activated charcoal refills. Stock No. G37-R-96.

4. Air-line mask, full facepiece, modified to use two cylinders of compressed air. Stock No. G37-M-57.

5. Self-generated oxygen breathing apparatus. Stock No. GF-23-B-289-60.

6. Solvent-resistant rubber gloves. Stock No. G37-G-2593 (sizes 9-11).

7. Coveralls. Stock No. G37-C-2572 (medium and large).

Protective Regulations.--Regulatory naval instructions pertaining to the use of insecticides:

1. BUMEDINST 6250.3 of 23 April 1953. This instruction lists the precautions required of naval personnel in the use of standard insecticidal items.

2. BUSHIPS ltr 49-275 of 5 April 1949. This letter cautions commands on the shipboard stowage of xylene-based DDT emulsion, an extremely inflammable material. Stock numbers are given for safe DDT emulsion concentrates for shipboard stowage.

3. SECNAVINST 6250.2 of 31 March 1953. This instruction is designed to prevent unnecessary procurement of nonstandard pesticides and pesticide dispersal devices, and to insure maximum safety and efficiency in those isolated instances where nonstandard items are required. (Kenneth L. Knight, Cdr. (MSC) USN, Preventive Medicine Division, Bureau of Medicine and Surgery)

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PENALTY FOR PRIVATE USE TO AVOID  
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